

1 What is claimed is:

2 1. A method for attaching a protective cover to a corner of a frame, said corner being  
3 defined by the intersection at a dihedral angle of two adjacent elongated intersecting channel  
4 members comprising two adjacent sides of said frame, said method comprising;

5 a. placing said frame corner over a corner protector preform comprising a thin sheet  
6 of flexible material, said sheet being foldable into a plurality of flaps,

7 b. depositing a first quantity of adhesive on a surface of a first said frame channel  
8 member,

9 c. bending upwardly from the plane of a base portion of said preform located  
10 beneath said frame a first flap section,

11 d. bending downwardly and inwardly toward said first channel member from the  
12 plane of said first flap section a portion thereof to thereby overlie said first quantity of adhesive  
13 on said first frame channel member,

14 e. depositing a second quantity of adhesive on an upper surface of said portion of  
15 said first flap section overlying said first quantity of adhesive,

16 f. bending upwardly from the plane of said base portion of said preform a second  
17 flap section,

18 g. bending downwardly and inwardly toward said second frame channel member  
19 a portion of said second flap section to thereby overlie said second quantity of adhesive,

20 h. pressing said overlying portion of said first flap section downwardly against said  
21 first quantity of adhesive to thereby adhere said overlying portion of said first flap section to  
22 said first frame channel member, and

23 i. pressing said overlying portion of said second flap section downwardly against  
24 said second quantity of adhesive to thereby adhere said overlying portion of said second flap  
25 portion to said first flap portion.

26 2. The method of Claim 1 wherein said first flap section includes a laterally elongated  
27 generally rectangularly-shaped outer spine flap having a height approximating that of said first  
28 frame channel member and adapted to lie vertically adjacent thereto, and a securement flap

1 adapted to be bent perpendicularly inwardly over an upper surface of said first frame channel  
2 member along a laterally disposed fold line joining said securement flap to said outer spine  
3 flap.

4 3. The method of Claim 2 wherein said second flap section includes a vertically elongated,  
5 generally rectangularly-shaped inner spine flap having a width approximating the height of said  
6 second channel member and adapted to lie vertically adjacent thereto, and an upper cover flap  
7 adapted to be bent perpendicularly inwardly over an upper surface of said second frame  
8 channel member along a vertically disposed fold line joining said upper cover flap to said inner  
9 spine flap, said upper cover flap having an inwardly protruding portion which overlies at least  
10 a portion of said securement flap.

11 4. The method of Claim 3 wherein said base portion of said preform is further defined as  
12 forming a lower cover panel for said frame when said preform is secured to said frame.

13 5. The method of Claim 4 wherein said base portion of said preform is further defined as  
14 having in plan view a right triangular shape, the base of which is in parallel vertical alignment  
15 with said first frame channel member, and the altitude of which is in parallel vertical alignment  
16 with said second frame channel member.

17 6. The method of Claim 5 wherein said upper cover flap is further defined as having in plan  
18 view a right triangular shape, the base of which is in parallel alignment with said first channel  
19 member and the altitude of which is in parallel alignment with said second channel member.

20 7. The method of Claim 4 wherein said base portion of said preform is further defined as  
21 having in plan view a rectangular shape, a first, base side which is in parallel vertical alignment  
22 with said first frame channel member, and a second side intersecting said first side which is  
23 in parallel vertical alignment with said second frame channel member.

24 8. The method of Claim 7 wherein said upper cover flap is further defined as having in plan  
25 view a rectangular shape, a first, base side of which is in parallel vertical alignment with said  
26 first channel member and a second side intersecting said first side which is in parallel vertical  
27 alignment with said second frame channel member.

1 9. The method of Claim 1 wherein said depositing of at least one of said first and second  
2 quantities of said adhesive comprises spraying said adhesive.

3 10. The method of Claim 9 wherein said adhesive is a molten hot-melt adhesive.

4 11. A method for attaching a protective cover to a corner of a frame such as a picture frame, said  
5 corner being defined by the intersection at a dihedral angle of two adjacent elongated intersecting  
6 channel members comprising two adjacent sides of said frame, said method comprising;

7 a. placing said frame corner over a flat corner protector pre-form comprising a thin sheet  
8 of flexible material, said sheet having

9 (i) a vertically elongated rectangular inner spine flap having a width approximately  
10 equal to the thickness of said intersecting channel members,

11 (ii) a first, lower cover flap having a vertical side coextensive with a first vertical side  
12 of said inner spine flap, and a base collinear and coextensive with a lower  
13 horizontal base of said inner spine flap,

14 (iii) a horizontally elongated, rectangularly-shaped outer spine flap depending  
15 downwardly from said base of said first, lower cover flap, said outer spine flap  
16 having a height approximately equal to the thickness of said intersecting channel  
17 members of said frame,

18 (iv) a horizontally elongated securement flap depending downwardly from said outer  
19 spine flap,

20 (v) a second, upper, cover flap shaped similarly to said first, lower cover flap and  
21 joined to a second vertical side of said inner spine flap in a laterally opposed  
22 location to said first lower cover flap,

23 b. depositing a first quantity of adhesive on a surface of said first frame channel member,

24 c. folding upwards from the plane of said first, lower cover flap of said corner protector  
25 preform said outer spine cover flap and said securement flap adjacent a side wall of said first channel  
26 member,

27 d. folding said securement flap perpendicularly inwards from said inner cover flap to overlie  
28 said first quantity of adhesive on said first channel member,

1 e. depositing a second quantity of adhesive on an upper surface of said securement flap  
2 overlying said first quantity of adhesive,

3 f. folding upwards from the plane of said corner protector preform said inner spine flap and  
4 said second upper flap adjacent a side wall of said second channel member,

5 g. folding said second upper cover flap perpendicularly inwards along said junction line  
6 between said second vertical edge wall of said inner spine flap and said upper cover flap to overlie said  
7 second quantity of adhesive on said securement flap and the upper wall surface of said second channel  
8 member,

9 h. pressing said securement flap downwardly against said first quantity of adhesive to  
10 thereby adhere said securement flap to said first frame channel member, and

11 i. pressing said upper cover flap downwardly against said second quantity of adhesive to  
12 thereby adhere said upper cover flap to said securement flap.

13 12. The method of Claim 11 wherein the upper surface of said corner protector preform which is  
14 located at said first vertical side of said inner spine flap coextensive with said side of said lower cover  
15 flap is further defined as being scored to facilitate folding of said inner spine flap relative to said lower  
16 cover flap.

17 13. The method of Claim 12 wherein the upper surface of said corner protector preform on which  
18 is located said second vertical side of said inner spine flap is further defined as being scored to facilitate  
19 folding of said upper cover flap relative to said inner spine flap.

20 14. The method of Claim 13 wherein the upper surface of said corner protector preform on which  
21 is located the intersection between said lower cover flap and said outer spine flap further defined as being  
22 scored to facilitate folding of said outer spine flap relative to said lower cover flap.

23 15. The method of Claim 14 wherein the upper surface of said corner protector preform on which  
24 is located the intersection between said securement flap and said outer spine flap is further defined as  
25 being scored to facilitate folding of said securement flap relative to said outer spine flap.

26 16. The method of Claim 15 wherein said base portion of said preform is further defined as  
27 having in plan view a right triangular shape, the base of which is in parallel vertical alignment  
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1 with said first frame channel member, and the altitude of which is in parallel vertical alignment  
2 with said second frame channel member.

3 17. The method of Claim 16 wherein said upper cover flap is further defined as having in  
4 plan view a right triangular shape, the base of which is in parallel alignment with said first  
5 channel member and the altitude of which is in parallel alignment with said second channel  
6 member.

7 18. An apparatus for attaching a protective cover to a corner of a frame such as a picture  
8 frame, said frame having a pair of adjacent elongated frame channel members which intersect  
9 to form said corner, said protective cover being fabricated from a preform made of a thin sheet  
10 of flexible material, said apparatus comprising;

11 a. means for depositing a first quantity of adhesive on a surface of said first frame  
12 channel,

13 b. means for bending upwardly from the plane of a base portion of said preform  
14 comprising a lower cover flap and located beneath said frame a first flap section adjacent to  
15 a side of said first frame channel member,

16 c. means for bending downwardly and inwardly towards said first frame channel  
17 member from the plane of said first flap section an end portion comprising a securement flap  
18 thereof to thereby overlie said first quantity of adhesive on said first frame channel member,

19 d. means for depositing a second quantity of adhesive onto an upper surface of  
20 said securement flap overlying said first quantity of adhesive,

21 e. means for bending upwardly from the plane of said base portion of said preform  
22 a second flap section adjacent a side of said second frame channel member.

23 f. means for bending downwardly and inwardly towards said second frame channel  
24 member an end portion of said second flap section comprising a second, upper cover flap to  
25 thereby overlie said second quantity of adhesive,

26 g. means for pressing said securement flap downwardly against said first quantity  
27 of adhesive to thereby adhere said securement flap to said first frame channel member, and  
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1 h. means for pressing said second, upper cover flap against said second quantity  
2 of adhesive to thereby adhere said upper cover flap to said securement flap.

3 19. The apparatus of Claim 18 wherein said means for bending adjacent a side wall of a first one of  
4 said pair of adjacent channel members a first flap section of said preform is further defined as being a  
5 first flap folder arm attached to a first end of a first vertically upwardly movable linear actuator, said arm  
6 being located in a first recess in the upper surface of a worktable, below said preform, whereby upward  
7 extensional motion of said first linear actuator forces said first flap section of said preform to bend  
8 upwardly from said worktable surface.

9 20. The apparatus of Claim 19 wherein said means for bending perpendicularly inwardly from said  
10 first side flap section of said preform a securement flap overlying said frame channel member is further  
11 defined as being first rotary actuator means coupled to said first flap folder arm, said first rotary actuator  
12 means being effective in rotating said first flap folder arm from an elevated position vertically aligned  
13 with said first arm recess to a position overlying said first channel member, thereby bending over from  
14 said first flap section of said securement flap.

15 21. The apparatus of Claim 20 wherein said means for bending adjacent a side wall of a second one  
16 of said pair of adjacent channel members a second flap section of said preform is further defined as being  
17 a second flap folder arm attached to a first, upper end of a second vertically upwardly movable linear  
18 actuator, said arm being located in a second recess in said upper surface of said worktable, below said  
19 preform, whereby upward extensional motion of said second linear actuator forces said second side  
20 portion of said preform to bend upwardly from said worktable surface.

21 22. The apparatus of Claim 21 wherein said means for bending said second upper cover flap  
22 perpendicularly inwards from said section flap is further defined as being second rotary actuator means  
23 coupled to said second flap folder arm, said second rotary actuator means being effective in rotating said  
24 second flap folder arm from an elevated position vertically aligned with said second arm recess to a  
25 position overlying said second channel member.

26 23. The apparatus of Claim 18 wherein said means for depositing adhesive onto said surface of said  
27 frame and said surface of said preform is further defined as including an applicator head having at least  
28 one nozzle adapted to spray liquid adhesive onto said surfaces.

24. An apparatus for adhesively bonding a corner protector preform to a corner of a frame such as a picture frame, said corner being defined by the intersection at a dihedral angle of first and second adjacent elongated intersecting channel members comprising two adjacent sides of said frame, said corner protector preform comprising a thin sheet of flexible material including

- (i) a vertically elongated, rectangularly-shaped inner spine flap having a width approximately equal to the thickness of said intersecting channel members,
- (ii) a first, lower face cover flap having a side coextensive with a first vertical side of said inner spine flap, and a base colinear with a laterally disposed base of said inner spine flap,
- (iii) a horizontally elongated, rectangularly-shaped outer spine flap, which depends downwardly from said base of said first, lower face cover flap having a height approximately equal to the thickness of said intersecting channel members of said frame,
- (iv) a horizontally elongated securement flap depending downwardly from said outer spine flap, and
- (v) a second, upper face cover flap section shaped similarly to said lower face cover flap section and joined to a second vertical side of said inner spine flap in a laterally opposed location to said lower face cover flap, said apparatus comprising:
  - a. support means for supporting said preform and a corner of said frame overlying said lower cover flap of said preform,
  - b. means for depositing a first quantity of adhesive onto a surface of said first frame channel member,
  - c. means for bending upwardly and adjacent said first intersecting side channel member of said frame from the plane of said preform and said lower face cover flap, said outer spine flap and said securement flap,
  - d. means for bending inwardly from said outer spine flap said securement flap section to a location overlying said first side channel member of said frame,
  - e. means for depositing a second quantity of adhesive onto an upper surface of said securement flap overlying said first quantity of adhesive,

- 1 <sup>sub</sup> f. means for bending upwardly adjacent said second intersecting channel member of said  
2 frame from the plane of said preform and said lower face cover flap said inner spine flap and said upper  
3 face cover flap,
- 4 g. means for bending inwardly from said inner spine flap said upper face cover flap to  
5 position a portion thereof to a location overlying said quantity of adhesive on said securement flap,
- 6 h. means for pressing said securement flap downwardly against said first quantity  
7 of adhesive to thereby adhere said securement flap to said first frame channel member, and
- 8 i. means for pressing said second, upper cover flap against said second quantity  
9 of adhesive to thereby adhere said upper cover flap to said securement flap.
- 10 25. The apparatus of Claim 24 further including means for releasably securing said frame to said  
11 supporting means of said apparatus.
- 12 26. The apparatus of Claim 25 wherein said means for releasably securing said frame to said  
13 supporting means of said apparatus is further defined as being a clamping bar.
- 14 27. The apparatus of Claim 26 wherein said clamping bar is further defined as being perpendicularly  
15 actuatable relative to said support means.
- 16 28. The apparatus of Claim 24 further including guide means for slidably receiving and holding in  
17 a fixed horizontal disposition relative to said support means.
- 18 29. The apparatus of Claim 28 wherein said guide means is further defined as comprising in  
19 combination a pair of elongated blocks disposed obliquely to one another and having inner facing  
20 obliquely disposed wall surfaces inclined relative to one another at said dihedral angle of said frame, said  
21 blocks having between converging longitudinal ends thereof a laterally disposed space adapted to  
22 insertably receive said corner of said frame.
- 23 30. The apparatus of Claim 24 wherein said support means is further defined as being a tabular body  
24 having a generally flat upper work surface.
- 25 31. The apparatus of Claim 30 wherein said means for bending said outer spine flap and said  
26 securement flap from the plane of said lower face cover flap is further defined as comprising in  
27 combination a first flap folder arm having a flat wall surface disposed parallel to and spaced outwardly  
28 apart from said first frame channel member, and first linear actuator means for elevating said first flap



1 folder arm vertically upwardly from a first recessed portion of said tabular body, flush with said upper  
2 work surface.

3 32. The apparatus of Claim 31 wherein said means for bending said securement flap inwardly from  
4 said outer spine flap is further defined as first rotary actuator means coupled to said first linear actuator  
5 means, said first rotary actuator means being effective in rotating said inner wall of said first flap folder  
6 arm inwardly towards said first frame channel member.

7 33. The apparatus of Claim 32 wherein said means for bending said inner spine flap and said upper  
8 face cover flap of said preform is further defined as comprising in combination a second flap folder arm  
9 having a flat inner wall surface disposed parallel to and spaced outwardly apart from said second frame  
10 channel member and second linear actuator means for elevating said second flap folder arm vertically  
11 upwardly from a second recessed portion of said tabular body, flush with said upper work surface.

12 34. The apparatus of Claim 33 wherein said means for bending said upper face cover flap from said  
13 inner spine flap is further defined as second rotary actuator means coupled to said second linear actuator  
14 means, said second rotary actuator means being effective in rotating said inner wall of said second flap  
15 folder arm inwardly towards said second frame channel member.

16 35. The apparatus of Claim 24 wherein said means for depositing adhesive onto said surface of said  
17 frame and said surface of said preform is further defined as including an applicator head having at least  
18 one nozzle adapted to spray liquid adhesive onto said surfaces.

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